THE

AMERICAN JOURNAL OF SCIENCE.

EDITOR: EDWARD S. DANA.

ASSOCIATE EDITORS

PROFESSORS GEO. L. GOODALE, JOHN TROWBRIDGE, W. G. FARLOW AND WM. M. DAVIS, OF CAMBRIDGE,

PROFESSORS A. E. VERRILL, HENRY S. WILLIAMS, AND L. V. PIRSSON, OF NEW HAVEN,

PROFESSOR GEORGE F. BARKER, OF PHILADELPHIA,
MR. J. S. DILLER, OF WASHINGTON.

FOURTH SERIES.

VOL. XI—[WHOLE NUMBER, CLXI.]

WITH SEVEN PLATES.

APR 1902

NEW HAVEN, CONNECTICUT.

1901.

R v.161-162 1901

Rel

THE TUTTLE, MOREHOUSE & TAYLOR CO.,
NEW HAVEN

CONTENTS TO VOLUME XI.

Number 61.

Page

ART. I.—Stereographic Projection and its Possibilities, from a Graphical Standpoint; by S. L. PENFIELD (With Plate I.) 1

II.—Mode of Occurrence of Topaz near Ouro Preto, Brazil; by O. A. DERBY 25

III.—Chemical Study of the Glaucophane Schists; by H. S. WASHINGTON 35

IV.—Nature of the Metallic Veins of the Farmington Meteorite; by O. C. FARRINGTON 60

V.—Erigenia bulbosa *Nutt*; by T. HOLM 63

VI.—New Species of Merycochœrus in Montana, Part II; by E. DOUGLASS 73

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics—Periodic Phenomena connected with the Solution of Chromium in Acids, W. OSTWALD, 84.—Krypton, LADENBURG and KRUEGEL, 85.—Combustion of Gases, S. TANTAR, 86.—Combustion of Acetylene in Air enriched with Oxygen. G. L. BOURGEREL: Inverse effect of a magnetic field upon an electric charge M. V. CREMIEU: Electrical Convection, M. V. CREMIEU: Unipolar Induction, E. LECHER, 87.—Electron theory of metals, P. DRUDE: Simple modification of the Wehnelt interrupter, 88.

Geology and Mineralogy—Geological and Natural History Survey of Minnesota, Vol. V, N. H. WINCHELL and U. S. GRANT, 88.—Étude mineralogique et pétrographique des Roches gabbroïques de l'État de Minnesota, États Unis, et plus specialment des Anorthosites, A. N. WINCHELL: Roches Éruptives des Environs de Ménerville, Algérie, L. DUPARC, F. PEARCE and E. RITTER: Charnockite Series, a group of Archean Hypersthenic rocks in Peninsular India, T. H. HOLLAND: Geologische Skizze der Besitzung Jushno-Saoserk und des Berges Deneshkin Kamen in nordlichen Ural, F. LOEWINSON-LESSING, 89.—Some Principles controlling Deposition of Ores, C. R. VAN HISE: Physical Geography of the Texas Region, R. T. HILL, 90.—Field Operations of the Division of Soils, 1899, M. WHITNEY: Études sur les Minéraux de la Roumanie, P. PONI, 91.—Mineralogy, F. RUTLEY: Corundum and the Basic Magnesian Rocks of Western North Carolina, J. O. LEWIS, 92.

Botany—Maladies et les Ennemis des Caféiers, G. DELACROIX, 92.—Monographie und Iconographie der Oedogoniaceen, K. E. HIRN, 93.—Ueber Sclerotinia cinerea and Sclerotinia fructigena, M. WORONIN: Platydorina, a new Genus of the Family Volvocidae, from the Plankton of the Illinois River, C. A. KOFOID, 94.

Miscellaneous Scientific Intelligence—Velocity of Seismic Waves in the Ocean, C. DAVISON: Old Indian Village, J. A. UDDEN, 95.—Anleitung zur mikroskopischen Untersuchung der vegetabilischen Nahrungs- und Genussmittel, A. F. W. SCHIMPER, 96.

Number 62.

Page

ART. VII.—Apparent Hysteresis in Torsional Magnetostriction, and its relation to Viscosity; by C. BARUS 97

VIII.—Dinosaurian Genus Creosaurus, Marsh; by S. W. WILLISTON 111

IX.—Stereographic Projection and its Possibilities, from a Graphical Standpoint; by S. L. PENFIELD. (With Plates II, III and IV.) 115

X.—Melting Point of Gold; by L. HOLBORN and A. L. DAY 145

XI.—New mineral occurrences in Canada; by G. C. HOFFMANN 149

XII.—Spectrum of the more Volatile Gases of Atmospheric Air, which are not Condensed at the Temperature of Liquid Hydrogen; by S. D. LIVEING and DEWAR 154

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics—Diethyl Peroxide, BAEYER and VILLIGER, 162.—Ammonium Amalgam, A. COEHN: Hydrogen Telluride, ERNYEI, 163.—Conductivities of some Double Salts as Compared with the Conductivities of Mixtures of their Constituents, F. LINDSAY: Cause of the Loss in Weight of Commercial Platinum when Heated, R. W. HALL: Elementary Treatise on Qualitative Chemical Analysis, J. F. SELLERS, 164.—Bedeutung der Phasenlehre, H. W. B. ROOZEBOOM: Visibility of Hydrogen in Air, Lord RAYLEIGH: Wireless Telegraphy, SLABY and Count ARCO, 165.—Telegraphone, V. POULSEN: Properties of Argon and its Companions, W. RAMSAY and M. W. TRAVERS, 166—Studies from the Yale Psychological Laboratory, E. W. SCRIPTURE, 168.

Geology and Mineralogy—Periodic Variations of Glaciers, F. A. FOREL, 168.—Contributions to the Tertiary Fauna of Florida, W. H. DALL: Record of the Geology of Texas for the decade ending December 31, 1896, F. W. SIMONDS: Geological Survey of Canada, G. M. DAWSON: Report on the Geology and Natural Resources of the Country traversed by the Yellow Head Pass Route from Edmonton to Tête Jaune Cache, comprising portions of Alberta and British Columbia, J. MCEVOY, 170.—Mesozoic Fossils, Vol. I, Pt. IV. On some additional or imperfectly understood fossils from the Cretaceous Rocks of the Queen Charlotte Islands, with a revised list of the species from these rocks, J. F. WHITEAVES: Geology of the Albuquerque Sheet, C. L. HERRICK and D. W. JOHNSON: I Vulcani dell' Italia Centrale. Parte I. Vulcano Laziale, V. SABITINI: Occurrence of Zoisite and Thulite near Baltimore, 171.

Miscellaneous Scientific Intelligence—Transcontinental Triangulation and the American Arc of the Parallel, C. A. SCHOTT, 172.—Astronomical Observatory of Harvard College, 173.—Norway; Official Publication of the Paris Exhibition, 1900: American Museum of Natural History: Principles of Mechanics: an Elementary Exposition for Students in Physics, F. SLATE: Knowledge Diary and Scientific Hand-book for 1901, 174.

Number 63.

Page

ART. XIII.—Circular Magnetization and Magnetic Permeability; by J. TROWBRIDGE and E. P. ADAMS 175

XIV.—Notes on the Geology of Parts of the Seminole, Creek, Cherokee and Osage Nations; by C. N. GOULD 185

XV.—Names for the formations of the Ohio Coal-measures; by C. S. PROSSER 191

XVI.—New American Species of Amphicyon; by J. L. WORTMAN 200

XVII.—Studies in the Cyperaceæ, No. XV; by T. HOLM .. 205

XVIII.—Just Intonation Piano; by S. A. HAGEMAN 224

XIX.—Very on Atmospheric Radiation; by W. HALLOCK . 230

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics—Radio-active Lead, HOFMANN and STRAUSS: Physiological Action of Radium Rays, WALKHOFF: Chlorine Heptoxide, MICHAEL and CONN, 235.—Non-Existence of Trivalent Carbon, J. F. NORRIS: Diffusion of Gold in Solid Lead at Ordinary Temperature, W. C. ROBERTS-AUSTIN: Cerium, G. B. DROSSBACH: Method for Crystallizing Substances without the Formation of Crusts upon the Surface of the Liquid, A. WRÓBLEWSKI, 236.—Velocity of the ionized phosphorus emanation in the absence of electric field, C. BARUS: Thermo-chemistry of the alloys of copper and zinc, T. J. BAKER, 237.—Decrement of electrical oscillations in charging condensers, A. F. SUNDELL and HJ. TALLQUIST: Effect of a magnetic field on the discharges through a gas, R. S. WILLOW: Conductivity produced in gases by the motion of negatively charged ions, TOWNSEND, 238.—Recueil de Données Numériques publié par la Société Française de Physique, H. DUFET: One Thousand Problems in Physics, W. H. SNYDER and I. O. PALMER, 239.

Geology and Mineralogy—Maryland Geological Survey: Allegheny County, W. B. CLARK: U. S. Geologial Survey, C. D. WALCOTT, 240.—Geological Survey of Michigan, A. C. LANE, 241.—Geological and Natural History Survey of Minnesota, N. H. WINCHELL: Pleistocene Geology of the South Central Sierra Nevada with especial reference to the Origin of Yosemite Valley, H. W. TURNER, 242.—Geologisches Centralblatt: Metasomatic Processes in Fissure Veins, W. LINDGREN, 243.—Some Iowa Dolomites, N. KNIGHT, 244.—Minerals of Ontario: Text-book of Important Minerals and Rocks, with tables on the determination of minerals, S. E. TILLMAN: Los Minerales, G. BODENBENDER, 246.

Botany—Monograph of the North American Umbelliferæ, J. M. COULTER and J. N. ROSE, 247.—Foundations of Botany, J. Y. BERGEN, 248.—Flora of Vermont: Catalogue of the African Plants collected by Dr. Friedrich Welwitsch in 1853–61, W. P. HIERN, 249.—Botany: an Elementary Text for Schools, L. H. BAILEY: Plant Life and Structure, E. DENNERT, 250.

Miscellaneous Scientific Intelligence—Comparative Physiology of the Brain and Comparative Psychology, J. LOEB: Microbes et Distillerie, L. LÉVY: Gesang der Vögel, seine anatomischen und biologischen Grundlagen, V. HÄCKER, 251.—O. S. U. Naturalist: Ostwald's Klassiker der Exakten Wissenschaften: Director-General of the Geological Survey of the United Kingdom, 252.

Number 64.

Page

ART. XX.—Magnetic Theory of the Solar Corona; by F. H. BIGELOW 253

XXI.—Tertiary Springs of Western Kansas and Oklahoma; by C. N. GOULD 263

XXII.—Fundamental Propositions in the Theory of Elasticity: A study of primary or self-balancing stresses; by F. H. CILLEY 269

XXIII.—Boiling Point of Liquid Hydrogen, determined by Hydrogen and Helium Gas Thermometers; by J. DEWAR 291

XXIV.—Nature of Vowels; by E. W. SCRIPTURE 302

XXV.—Behavior of the Phosphorus Emanation in Spherical Condensers; by C. BARUS 310

XXVI.—Concretions of Ottawa County, Kansas; by W. T. BELL 315

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics—Ammonium Bromide and the Atomic Weight of Nitrogen, A. SCOTT: Combustion of Gases, S. TANTAR, 317.—Peculiar Blue Color produced when Potassium and Sodium Sulphocyanides are Heated, W. B. GILES: Method of obtaining Crystals of difficultly Crystallizable Substances, A. RÜMPLER: Elimination of Methane in the Atmosphere, V. URBAIN, 318.—Introduction to Modern Scientific Chemistry, LASSAR-COHN: Ausgewählte Methoden der Analytischen Chemie, A. CLASSEN, 319.—Radiation Law of Dark Bodies, F. PASCHEN: Unipolar Induction, E. HAGENBACH: Effect of Electricity on Bacteria, A. MACFADYN, 320.—Electric Convection, M. V. CREMIEU: Preservation of Photographic Records, W. J. S. LOCKYER: Eclipse Cyclone and the Diurnal Cyclone, H. H. CLAYTON, 321.—Attempt to show that the earth being a magnet draws ether with it, W. ROLLINS, 322.—Presence of Gallium in the Sun, W. N. HARTLEY and H. RAMAGE, 323.

Geology—Geology of the Boston Basin W. O. CROSBY: University Geological Survey of Kansas, S. W. WILLISTON, 324.—Orange River Ground-Moraine, A. W. ROGERS and E. H. L. SCHWARZ, 325.—Founders of Geology, A. GEIKIE: Gesetz der Wüstenbildung in Gegenwart und Vorzeit, J. WALTHER, 326.

Zoology—Recent papers relating to the fauna of the Bermudas, 326.—Trans. Conn. Acad. Science: Zoological Results based on Material from New Britain, New Guinea, Loyalty Islands and elsewhere, A. WILLEY, 330.

Miscellaneous Scientific Intelligence—Leçons de Physiologie Expérimentale, R. DUBOIS et E. COUVREUR, 330.—Webster's International Dictionary, New Edition, 331.—The National Standardizing Bureau, 332.

Obituary—GEORGE MERCER DAWSON: CHARLES HERMITE: ADOLPHE CHATIN: J. C. AGARDH, 332.

Number 65.

Page

ART. XXVII.—Studies of Eocene Mammalia in the Marsh Collection, Peabody Museum; by J. L. WORTMAN. With Plate V 333

XXVIII.—Velocity of Chemical Reactions; by W. DUANE. 349

XXIX.—Transmission of Sound through porous materials; by F. L. TUFTS 357

XXX.—Yoke with intercepted Magnetic Circuit for measuring Hysteresis; by Z. CROOK 365

XXXI.—Mineralogical Notes; by C. H. WARREN 369

XXXII.—Expansion of Certain Metals at High Temperatures; by L. HOLBORN and A. L. DAY 374

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics—Sulphur Hexafluoride, Thionyl Fluoride, and Sulphuryl Fluoride, MOISSAN and LEBEAU: Molecular Weight of Ozone, A. LADENBURG, 391.—Preparation of Chlorine from Sodium Chlorate, C. GRAEBE: New Alkaloids in Tobacco, PICTET and ROTSCHY, 392.—Hydrate of Sulphuryl Chloride, BAEYER and VILLIGER: Action of Hydrogen Peroxide upon Silver Oxide, BAEYER and VILLIGER, 393.—Action of Alcohol on Metals with which it comes in Contact, MALMÉJAC: Excitation and Measure of Sine Currents, M. WIEN: Metallic Reflection of Electrical Waves, K. F. LINDMAN: Light Transparency of Hydrogen, V. SCHUMANN, 394.—Measurement of the Röntgen Rays by means of Selenium, F. HIMSTEDT: Effect of the Röntgen Rays and the Becquerel Rays on the Eye, F. HIMSTEDT and W. A. NAGEL, 395.

Geology and Natural History—Eocene and Lower Oligocene Coral Faunas of the United States, T. W. VAUGHAN, 395.—Presence of a Limestone Conglomerate in the Lead region of St Francis Co., Mo., F. L. NASON: New Species of Cambrian from Cape Breton, G. F. MATTHEW: Geological Survey of Western Australia, A. G. MAITLAND, 396.—Geology of Texas, F. W. SIMONDS: Concretions from the Champlain Clays of the Connecticut Valley, J. M. A. SHELDON: Study of the Gabbroid Rocks of Minnesota, A. N. WINCHELL: Flow of Marble under Pressure, ADAMS and NICOLSON, 397.—Flora of Cheshire, S. MOORE: Preliminary list of the Spermatophyta of North Dakota, H. L. BOLLEY and L. R. WALDRON, 398.

Miscellaneous Scientific Intelligence—New Star in Perseus, T. D. ANDERSON, 399.—National Academy of Sciences: Report of the Secretary of the Smithsonian Institution for the year ending June 30, 1900, 400.—Memorial of George Brown Goode: U. S. Coast and Geodetic Survey, 401.—La Navigation Sousmarine, M. GAGET: Geological Survey of Great Britain: Geological Survey of Canada, 402.

Obituary—Dr. HENRY A. ROWLAND: Professor GEORGE F. FITZGERALD: Professor CHRISTIAN F. LÜTKEN, 402.

Number 66.

Page

ART. XXXIII.—The New Spectrum; by S. P. LANGLEY. With Plate VII 403

XXXIV.—Rival Theories of Cosmogony; by O. FISHER 414

XXXV.—Study of some American Fossil Cycads. Part IV. Microsporangiate Fructification of Cycadeoidea; by G. R. WIELAND 423

XXXVI.—Studies of Eocene Mammalia in the Marsh Collection, Peabody Museum; by J. L. WORTMAN. With Plate VI 437

XXXVII.—Cæsium-Antimonious Fluorides and Some Other Double Halides of Antimony; by H. L. WELLS and F. J. METZGER 451

XXXVIII.—"Mohawkite"; by J. W. RICHARDS 457

Henry Augustus Rowland 459

SCIENTIFIC INTELLIGENCE.

Chemistry and Physics—Radio-active Lead, HOFMANN and STRAUSS: Zirconia of Euxenite from Brevig, HOFMANN and PRANDTL, 463.—Action of Radium Rays upon Selenium, E. BLOCH: Reducing-power of Magnesium and Aluminum, A. DUBOIN: Method of Determining Atomic Weights, Based upon the Transparency of Substances to the X-Rays, L. BENOIST, 464.—Presence of Platinum upon an Egyptian Hieroglyphic Inscription, BERTHELOT: Generalization from Trouton's Law, DE FORCAND, 465.—Wissenschaftliche Grundlagen der analytischen Chemie, W. OSTWALD: Spectrum of Carbon Compounds, A. SMITHELLS, 466.—Absorption of Gas in a Crookes Tube, R. S. WILLOW: Mechanical Movements of Wires produced by Electrical Discharges which also make these Movements luminous, O. VIOL: Band Spectrum of Oxides of Aluminum and Nitrogen, G. BERNDT: Électricité et Optique; La Lumière et les Théories Électrodynamiques, H. POINCARÉ, 467.

Geology and Natural History—U. S. Geological Survey, 21st Annual Report of the Director, C. D. WALCOTT, 468.—Physiography of Acadia, R. DALY: Carte Géologique du Massif du Mont Blanc, L. DUPARC and L. MRAZEC: Mineral constituents of dust and soot from various sources, W. N. HARTLEY and H. RAMAGE, 470.—Studies in Fossil Botany, D. H. SCOTT: Flora of Western Middle California, W. L. JEPSON, 471.—Grand Rapids Flora, E. J. COLE, 472.—Variations of a newly-arisen Species of Medusa, A. G. MAYER, 473.

Miscellaneous Scientific Intelligence—Annals of the Astrophysical Observatory of the Smithsonian Institution, S. P. LANGLEY and C. G. ABBOT, 473.—Report of the U. S. National Museum: Journal of Hygiene: Annals of the Astronomical Observatory of Harvard College, E. C. PICKERING and E. S. KING, 474.

INDEX TO VOLUME XI, 475.